

IV. Claim 34, drawn to antisense to CA125, classifiable in class 536, subclasses 24.36 and 24.5.

Responsive to the Requirement for restriction, Applicants elect to prosecute the invention of group I, with traverse, Claims 1-19, 27, and 30-33 drawn to a polypeptide composition. Additionally, Applicant is required under 35 U.S.C § 121 to elect a single disclosed species for prosecution on the merits to which claims shall be restricted if no generic claim is finally held to be allowable. “Specifically, if Group I is elected above, application is required to pick a single combination of amino acid sequences for examination on the merits.”

Applicants respectfully request reconsideration of the Requirement for Restriction, or in the alternative, modification of the Restriction Requirement to allow prosecution of more than one group of Claims designated by the Examiner in the present Application, for the reasons provided as follows.

Under 35 U.S.C § 121 “two or more independent and distinct inventions . . . in one Application may . . . be restricted to one of the inventions.” Inventions are “independent” if “there is no disclosed relationship between the two or more subjects disclosed” (MPEP 802.01). The term “distinct” means that “two or more subjects as disclosed are related . . . but are capable of separate manufacture, use or sale as claimed, AND ARE PATENTABLE OVER EACH OTHER” (MPEP 802.01) (emphasis in original). However, even with patentably distinct inventions, restriction is not required unless one of the following reasons appear (MPEP 808.02):

1. Separate classification
2. Separate status in the art; or
3. Different field of search.

Further, under patent Office Examining Procedures, “[i]f the Search and Examination of an entire Application can be made without serious burden, the Examiner must examine it on the merits, even though it includes claims to distinct or independent inventions” (MPEP 803, Rev. 8, May 1988) (emphasis added).

The Examiner’s assertions to the contrary notwithstanding, Applicants respectfully

submit that conjoint examination and inclusion of all of the Clams of the present Application would not present an undue burden on the Examiner, and accordingly, withdrawal of the Requirement for Restriction, or, at the least, modification to include the Claims drawn to Group I and Group II is in order.

With respect to the requirement to elect a single species for examination on the merits, Applicants respectfully traverse this requirement for the following reasons:

I. Claim 1(b) providing the multiple repeat domains does not include a genus species relationship

Claim 1(b) relates to a multiple repeat domain. A CA125 molecule can include a variety, if not all of the repeats in a single molecule. SEQ ID NO: 162 which show the recombinant molecule has been marked up as Appendix Tab A, to show the multiple repeats present in a single molecule. Claims to be restricted to different species must be mutually exclusive. The general test as to when claims are restricted respectively to different species is the fact that one claim recites limitations which under the disclosure are found in a first species, but not in a second, while a second claim recites limitations disclosed only from the second species and not the first. MPEP § 12.0[3][c]. As can be seen from an inspection of the recombinant molecule shown in SEQ ID NO: 162, CA125 molecule within the scope of claim 1(b) may have multiple repeat domains which are not mutually exclusive. Consequently, Applicants respectfully request examination on the multiple repeat domains as claimed.

This requirement to elect a single combination of repeats violates the basic right of the Applicants to claim his invention as he chooses. In re Weber, 580 F.2d 455 (USCC 1978).

II. Restriction is not appropriate if the claims are directed to substantially the same molecule

Species are patentably distinct when they are related, but they are capable of separate manufacture and are patentable (novel and nonobvious) over each other. The multiple repeat domains contain multiple repeats wherein each repeat unit has five genomic exons. The variation in repeats set out in Claim 1 (b) are 82% identical and thus present related chemical compounds. The repeat domain is a sequence of 156 amino acids which are repeated multiple times within a discrete portion of the CA125 protein. The repeat domain has its own function and combines with the other domains to provide the overall function of the protein. The

designated exons in the repeat domain can vary, but, this variance is minimal. Importantly, when the nucleic acids are expressed they form a CA125 protein.

Restriction is not appropriate if claims are directed to the same protein.

Applicant hereby elects the following species, with traverse, for prosecution on the merits.

1. A CA125 molecule, comprising:
  - (a) an extracellular amino terminal domain, comprising 5 genomic exons, wherein exon 1 comprises amino acids #1-33 of SEQ ID NO: 299, exon 2 comprises amino acids #34-1593 of SEQ ID NO: 299, exon 3 comprises amino acids #1594-1605 of SEQ ID NO: 299, exon 4 comprises amino acids #1606-1617 of SEQ ID NO: 299, and exon 5 comprises amino acids #1618-1637 of SEQ ID NO: 299;
  - (b) a multiple repeat domain, wherein each repeat unit comprises 5 genomic exons, wherein exon 1 comprises amino acids #1-42 in any of SEQ ID NO: 186; exon 2 comprises amino acids #43-65 in any of SEQ ID NO: 197; exon 3 comprises amino acids #66-123 in any of SEQ ID NO: 244; exon 4 comprises amino acids #124-135 in any of SEQ ID NO: 271; exon 5 comprises amino acids #136-156 in any of SEQ ID NO: 287; and
  - (c) a carboxy terminal domain comprising a transmembrane anchor with a short cytoplasmic domain, and further comprising 9 genomic exons, wherein exon 1 comprises amino acids #1-11 of SEQ ID NO: 300; exon 2 comprises amino acids #12-33 of SEQ ID NO: 300; exon 3 comprises amino acids #34-82 of SEQ ID NO: 300; exon 4 comprises amino acids #83-133 of SEQ ID NO: 300; exon 5 comprises amino acids #134-156 of SEQ ID NO: 300; exon 6 comprises amino acids #157-212 of SEQ ID NO: 300; exon 7 comprises amino acids #213-225 of SEQ ID NO: 300; exon 8 comprises amino acids #226-253 of SEQ ID NO: 300; exon 9 comprises amino acids #254-284 of SEQ ID NO: 300.

In view of the above, withdrawal of the Requirement for the Restriction is requested, and an early action on the merits of the Claims is courteously solicited.

Respectfully Submitted,

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Date: 1-13-04

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**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, on 1-13-04, in a package addressed to: Mail Stop: Art Unit 1635, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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EXAMINER

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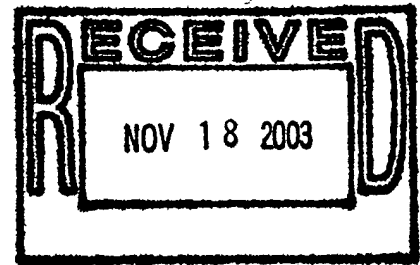
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Please find below and/or attached an Office communication concerning this application or proceeding.



**DOCKETED**

NOV 19 2003

Butler, Snow, O'Mara

***Notice of Non-Responsive Amendment***

Applicant's Amendment, filed September 15, 2003 is acknowledged.

***Election/Restrictions***

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant's election without traverse of Group I (claims 1-19, 27, and 30-33) is acknowledged. With respect to election of a species, Applicant's election without traverse of the amino acid sequence set out in SEQ ID NO:162 is acknowledged. However, this election of species is non-responsive to the previous Restriction Requirement, filed June 10, 2003 for the following deficiencies: In the previous Restriction Requirement, at page 3, last paragraph, it is explicitly stated that, "Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Specifically, if Group I is elected above, Applicant is required to pick a single combination of amino acid sequences for examination on the merits" [emphasis added]. Applicant's election of SEQ ID NO:162 is not a single combination of amino acid sequences for examination, but is instead, the entire coding region of the CA125 gene.

Applicants are required to pick a single combination of amino acid sequences for examination on the merits.

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Applicant is reminded, should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the Examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Since the reply filed on June 11, 2003 appears to be *bona fide*, applicant is given a TIME PERIOD of **ONE (1) MONTH** or **THIRTY (30) DAYS** from the mailing date of this notice, whichever is longer, within which to submit an amendment in compliance with 37 CFR 1.121 in order to avoid abandonment. **EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terra C. Gibbs whose telephone number is (703) 306-3221. If

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attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John L. LeGuyader can be reached on (703) 308-0447. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8693 for regular communications and (703) 872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

tcg

November 7, 2003



KAREN A. LACOURCIERE, PH.D  
PRIMARY EXAMINER



# multiple repeat domain

A TVPFMVPTL NPTITNLQYE EDMRHGPSRK

12101 FNATERELQG <sup>164</sup>ILKPLFRNSS <sup>195</sup>LEYLYSGCRL ASL<sup>222</sup>PEKDSS AMAVDAICTH <sup>250</sup>

12151 RPDPELDGLD RERLYWELSN LTNGIQELGP YTLDNRNSLYV NQ<sup>278</sup>THRSSMP <sup>171</sup>

12201 TTST<sup>197</sup>PGTSTV DVGTS<sup>223</sup>GPSS SPSPTAAGPL LMPFTLNFTI TNLOYEEDMR <sup>197</sup>

12251 ~~RTGSRKFNTH ESVLOGILKP LKNTSVGCL YSGCRLTLR PEKDGAAICV~~

12301 DAICTHRLDP KSPGLNREQ YWELSKLTND IEELGPYTLD RNSLYVNG<sup>262</sup>FT <sup>279</sup>

12351 HQSSVSTTST<sup>173</sup>PGTSTVDLRT SCTPSSLSPP TIMAAGPLL<sup>201</sup>V PFTLNFTITN

12401 LQYGEDMGHP GSRKFNTTER VLQGLGPIF KNTSVGPLYS GCRLTSLR<sup>234</sup>SE

12451 KDGAATGVDA ICIHHLDPKS PGLNRERLYW ELSQLTNGIK ELGPYTLDNRN

12501 SLYVNG<sup>252</sup>FTHR TSVPTSST<sup>280</sup>PG TSTVDLGTS TPFSLPSPAT AGPLLVLFTL

12551 NPTITNLKYE EDMRHGPSRK FNTTERVLQT ILGPMFKNTS <sup>202</sup>VGLLYSGCRL

12601 TLLR<sup>235</sup>PEKDGA ATGVDAICTH RLDPKSPGLD REQLYWELSQ LTNGIKELGP

12651 YTLDNRNSLYV NQ<sup>267</sup>FTHWIPVP TSST<sup>281</sup>PGTSTV DLGSGTPSSL PSPTAAGPLL

12701 VPF<sup>182</sup>TLNFTIT NLQYEEDMH PGSRKFNTTE RVLQGLGPM FKNTSVGLLY <sup>202</sup>

12751 SGCRLTLLR<sup>236</sup>PEKDGAATGVD AICTHRLDPK SPGVDREQLY WELSQLTNGI

12801 KELGPYTLDNR NSLYVNG<sup>243</sup>FTH QTSAPNTST<sup>283</sup>GTSTVDLGTS GTPSSLSPTS

12851 SAGPLLVPFT LNFTITNLQY EEDMRHGPSR KFNTERVLQ GILKPLFKST <sup>170</sup>

12901 SVGPLYSGCR LTLLR<sup>198</sup>PEKDGA AATGVDAICT HRLDPKSPGV DREQLYWELS <sup>236</sup>

12951 QLTNGIKELG PYTLDNRNSLY VNG<sup>263</sup>FTHTSA PNTSTPGTST VDLGTS<sup>283</sup>GPSS

13001 SLPSPT<sup>183</sup>SAGP LLVPFTLNFT ITNLQYEEDM HHPGSRKFNT TERVLQGLG

13051 PMFKNTSVGL LYSGCRLTLL <sup>202</sup>PEKNGAATG MDAICSHRLD PKSPGLNREQ <sup>240</sup>

13101 LYWELSQLTH GIKELGPYTL DRNSLYVNG<sup>250</sup>FT THRSSVAPTS TPGTSTVDLG

13151 TSGTPSSLPS PTA<sup>283</sup>AVPLLV FTLNFTITNL QYGEDMRHPS SRKFNTTERV <sup>165</sup>

13201 LQGLGPLFK NSSVGPLYSG CRLISLR<sup>205</sup>PEK DGAATGVDAI CTHHLNPQSP

13251 GLDREQLYWQ LSQMTNGIKE LGPYTLDNRNS LYVNG<sup>238</sup>FTHR SGLTTST<sup>257</sup>PWT

13301 STVDLGTS<sup>285</sup>GT PSPVPSPTA GPLLVPFTLN FTITNLQYEE DMRHGPSRK <sup>177</sup>

13351 NATERVLQGL LSPIFKNSSV GPLYSGCRLT SLR<sup>207</sup>PEKDGA TGM<sup>227</sup>DAVCLYH

13401 PNPKRPG<sup>280</sup>LDR EQLYWELSQL THNITELGPY SLDRDSLYVN <sup>180</sup>G<sup>265</sup>THQNSVPT

13451 TST<sup>280</sup>PGTSTVY WATTGTPSSP PGHT<sup>180</sup>PGPLL IPFTFNFTIT NLHYEENMQH

13501 PGSRKFNTE RVLOGILKPL FKNTSVGPLY SGCRLTSLRP EKDGAATGMD <sup>200</sup>  
 13551 AVCLYHPNPK RPGLDREQLY CELSQLTHNI TELGPYSLDR DSLYVNGFTH <sup>228</sup>  
 13601 QNSVPTTSTP GTSTVYWATT GTPSSFPGHT EPGPLLIFFT FNFTITNLHY <sup>205</sup> <sup>280</sup> <sup>186</sup>  
 13651 EENMQHPGSR KFNTTERVLQ GILKPLFKNT SVGPLYSGCR LTLLRPPEKHE <sup>197</sup>  
 13701 AATGVDTICT HRVDPIGPGL DRERLYWELS QLTNSITELG PYTLDRDSLY <sup>244</sup>  
 13751 VNGFNPRSSV PTTSTPGTSTVHLATSGTPS SLPGHAPVPVILIBETLNFT <sup>271</sup> <sup>287</sup>  
 13801 ITNLHYEENM QHPGSRKFNTE TTERVLQILK PLFKNTSVGP LYSGCRLTLL <sup>188</sup> <sup>197</sup>  
 13851 RPEKHEAATG VDTICTHRVD PIGPGLDREX LYWELSXLTX XIXELGPYXL <sup>2</sup>  
 13901 DRXSLYVNGF XXXXXXXXTS TPGTSXVXLX TSGTPXXXPX XTISAGPLLVP <sup>2</sup>  
 13951 FTLNFTITNL QYEEDMHHPG SRKFNTERV LQGLGPMFK NTSVGLLYSG <sup>183</sup> <sup>202</sup>  
 14001 CRTLLRPPEK RGAATGMDHFNHRLDPKSPGLDREQLYWE LSQTHNIKE <sup>241</sup>  
 14051 LGPYTLDRNS LYVNGFTHRS SVAPTSTPGT STVDLGTSST PSSLPSPPTA <sup>250</sup> <sup>283</sup>  
 14101 VPLLVPFTLN FTITNLQYGE DMHPGSRKF NTTERVLQGL LGPLFKNSSV <sup>165</sup>  
 14151 GPLYSGCRLI SLRSEKDGAA TGVDAICTHH LNPQSPGLDR EQLYWQLSQM <sup>205</sup> <sup>238</sup>  
 14201 TNGIKELGPY TLDNRSLYVN FTHRSSGLT TSTPWTSTVD LGTSGTPSPV <sup>257</sup> <sup>285</sup>  
 14251 PSPTTAGPLL VPFTLNFTIT NLQYEEDMHR PGSRKFNATE RVLOGILSPI <sup>177</sup>  
 14301 FKNSSVGPLY SGCRLTSLRP EKDGAATGMD AVCLYHPNPK RPGLDREQLY <sup>207</sup> <sup>227</sup>  
 14351 WELSOLTHNI TELGPYSLDR DSLYVNGFTH QSSMTTTRTP DTSTMHLATS <sup>289</sup> <sup>200</sup>  
 14401 RTPASLSGPT TASPLLVLFT INCTITNLQY EEDMRRTGSR KFNTMESVLQ <sup>172</sup>  
 14451 GILKPLFKNT SVGPLYSGCR LTLLRPKKDG AATGVDAICT HRLDPKSPGL <sup>197</sup> <sup>224</sup>  
 14501 NREQLYWELS KLTNDIEELG PYTLDRNSLY VNGFTHQSSV STTSTPGTST <sup>202</sup>  
 14551 VDLRTSGTPS SLSSPTIMXX XPLLXPFTLN FTITNLXYEE XMXXPGSRKF <sup>279</sup> <sup>2</sup>  
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 14651 PDPKSPGLDR EQLYWELSQL THSITELGPT TLDNRSLYVN FNPRSSVPT <sup>229</sup> <sup>271</sup>  
 14701 TSTPGTSTVH LATSGTPSSL PGHTXXXPLL XPFTLNFTIT NLXYEEXMXX <sup>287</sup> <sup>2</sup>  
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 14801 AICTHRPDP DLGLDRERLY WELSNLTNGI QELGPYTLD NSLYVNGFTH <sup>222</sup>  
 14851 RSSFLTSTP WTSTVDLGTS GTPSPVPSPT TAGPLLVPFT LNFTITNLQY <sup>259</sup> <sup>285</sup>

16351 NGAATGMDAT <sup>2</sup>CTHRLDPKSP GLDREXLYWE LSXLTXXIXE LGPYXLDKXS  
 16401 LYVNG<sup>2</sup>XXXXX XXXXTST<sup>7</sup>PGT SXVXLATSGT PXXXXPXXIXX XPLLXPFTLN  
 16451 FTITNLXVFE <sup>3</sup>XXXPGRKF NTTERVLOGL LKPLFRNGSL <sup>195</sup>EYLYSGCRLA  
 16501 <sup>222</sup>SLRPEKDSSA MAVDAICTHR PDPEDLGLDR ERLYWELSNL TNGIQELGPY  
 16551 TLDNRSLYVN <sup>250</sup>GTHRSSMPT <sup>278</sup>TSTPGTSTVD VGTSGTPSSS PSPTTAGPLL  
 16601 IPFTLNFTIT <sup>174</sup>NLOYGEDMGH <sup>253</sup>PGSRKFNTTE <sup>201</sup>RVLOGLGRI FKNTSVGPLY  
 16651 SGCRLTSLR<sup>234</sup> EKDGAATGVD AICIHHLDPK SPGLNRERLY WELSQLTNGI  
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 16751 TAGPLLVLFT <sup>176</sup>LNFTITNLKY EEDMHRPGSR KFNTTERVLO TILGPMFKNT  
 16801 SVGLLYSGCR <sup>202</sup>LTLRSEKDG <sup>7</sup>AATGVDAICT HRLDPKSPGL DREXLYWELS  
 16851 XLTXIXELG <sup>2</sup>PYXLDKXSLY <sup>7</sup>VNG<sup>2</sup>XXXXXX <sup>2</sup>XXTSTPGTSX <sup>2</sup>VXLXTSGTPX  
 16901 <sup>2</sup>XXPXXIXXP LLXPFTLNFT <sup>2</sup>ITNLXYEEXM <sup>2</sup>XXPGSRKFNT <sup>2</sup>TERVLOGLR  
 16951 <sup>215</sup>PVFKNTSVGP <sup>230</sup>LYSGCRLTLL <sup>261</sup>RPKKDGAATK <sup>261</sup>VDAICTYRPD <sup>261</sup>PKSPGLDREQ  
 17001 LYWELSQLTH <sup>291</sup>SITELGPYTQ <sup>187</sup>DRDSLXVNG<sup>187</sup> THRSSVPTTS <sup>187</sup>PGTSAVHLE  
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 17301 <sup>243</sup>LDPTGPGLDR <sup>243</sup>ERLYWELSQL <sup>243</sup>TNSITELGPY <sup>243</sup>TLDRDSLXVN <sup>243</sup>GFNPWSSVPT  
 17351 <sup>287</sup>TSTPGTSTVH <sup>287</sup>LATSGTPSSL <sup>287</sup>PGHTTAGPLL <sup>287</sup>VPFTLNFTIT <sup>287</sup>NLKYEEDMHC  
 17401 <sup>203</sup>PGSRKFNTTE <sup>203</sup>RVLOSLHGPM <sup>203</sup>FKNTSVGPLY <sup>203</sup>SGCRLTLR<sup>203</sup> EKDGAATGVD  
 17451 <sup>7</sup>AICTHRLDPK <sup>7</sup>SPGLDREXLY <sup>7</sup>WELSLTXXI <sup>7</sup>XELGPYXLDK <sup>7</sup>XSLYVNG<sup>7</sup>FXX  
 17501 <sup>7</sup>XXXXXXTSTP <sup>7</sup>GTSXVXLXTS <sup>7</sup>GTPXXXPXXT <sup>7</sup>XXXPELLXPFT <sup>7</sup>LNFTITNLXY  
 17551 <sup>7</sup>EEXMXXPGSR <sup>7</sup>KFNTTERVLO <sup>7</sup>GILXPXFKXT <sup>7</sup>SVGXLYSGCR <sup>7</sup>LTLRPEKXX  
 17601 <sup>7</sup>AATXVDXXCX <sup>7</sup>XXDPXXPGL <sup>7</sup>DREXLYWELS <sup>7</sup>XLTNSITELG <sup>7</sup>PYTLDKSLY  
 17651 <sup>251</sup>VNG<sup>251</sup>THRSSM <sup>251</sup>PITSIPGTS <sup>251</sup>VHLETSGTPA <sup>251</sup>SLPGHTAPGP <sup>251</sup>LLVPFTLNFT  
 17701 <sup>168</sup>ITNLQYEEDM <sup>168</sup>RHPGSRKFNT <sup>168</sup>TERVLOGLK <sup>168</sup>PLFKSTSVGP <sup>168</sup>LYSGCRLTLL

17751 RPEKRGAAATG VDTICTHRLD PLNPGLDREX LYWELSXLTX XIXELGPYXL  
 17801 DRXSLYVNGF XXXXXXXXTS TPGTSXVXLX TSGTPXXXXPX XTXXXPLLXP  
 17851 FTLNFTITNL XYEEXMXXPG SRKFNTTERV LQGLXPXFK XTSVGLXLYSG  
 17901 CRLTLRPEK XAAATXVDXX CXXXDPXXP GLDREXLYWE LSXLTXIXE  
 17951 LGPYXLDXRS LYVNGFPRS SVPTTSTPGT STVHLATSGT PSSLPGHTAP  
 18001 VPLLIPFTLN FTITNLHYEE NMQHPGSRKF NTTERVLQGL LGPMEKNTSV  
 18051 GLLYSGCRLT LLRPEKNGAA TGMDAICSHR LDPKSPGLDR EXLYWELSXL  
 18101 TXXIXELGPY XLDRXSLYVN QFXXXXXXXXX TSTPGTSXVX LXTSGTPXXX  
 18151 PXXTXXXPLL XPFTLNFTIT NLXYEEXMXX PGRKFNTTE RVLQGLXPX  
 18201 FKXTSVGXLY SGCRLTLRPEK EKXAAATXVD XXXXXXXDPX XPGLDREXLY  
 18251 WELSXLTXI XLGPYXLDX XSLYVNGFTH QNSVPTTSTP GTSTVYWATT  
 18301 GTPSSFPGHT EPGPLLIPFT FNFTITNLHY EENMQHPGSR KFNTTERVLQ  
 18351 GILTPLFKNT SVGPLYSGCR LTLRPEKOE AATGVDTICT HRVDPGPGGL  
 18401 DREXLYWELS XLTXXIXELG PYXLDXSLY VNGFXXXXXX XTSTPGTSX  
 18451 VXLXTSGTPX XXPXTXXXP LLXPFTLNFT ITNLXYEEXM XXPGRKFNT  
 18501 TERVLQGL LX PFKXTSVGX LYSGCRLTLL RPEKXAAATX VDXXCXXXXD  
 18551 PXXPGLDREX LYWELSXLTX XIXELGPYXL DRXSLYVNGF THRSSVPTTS  
 18601 SPGTSTVHLA TSGTPSSLPG HTAPVPLLIP FTLNFTITNL HYEENMQHPG  
 18651 SRKFNTTERV LQGLKPLFK STSVGPLYSG CRLTLRPEK HGAATGVDAI  
 18701 CTLRLDPTGP GLDREXLYWE LSXLTXIXE LGPYXLDXRS LYVNGFXXXX  
 18751 XXXXTSTPGT SXVXLXTSGT PXXXPXTXX XPLLXPFTLN FTITNLXYEE  
 18801 XMXPGSRKF NTTERVLQGL LXPXFKXTSV GXLYSGCRLT LLRPEKXXAA  
 18851 TXVDXXCXXX XDPXXPGLDR EXLYWELSXL TXXIXELGPY XLDRXSLYVN  
 18901 QFTHRTSVPT TSTPGTSTVH LATSGTPSSL PGHTAPVPLL IPFTLNFTIT  
 18951 NLQYEEDMHR PGRKFNTTE RVLQGLSPI FKNSSVGPLY SGCRLTSLRPE  
 19001 EKDGAAATGMD AVCLYHPNPK RPGLDREQLY CELSQLTHNI TELGPYSLDR  
 19051 DSLYVNGFTH QNSVPTTSTP GTSTVYWATT GTPSSFPGHT XXXPLLXPFT  
 19101 LNFTITNLXY EEXMXXPGSR KFNTTERVLQ GILXPXFKXT SVGLXLYSGCR  
 19151 LTLRPEKXX AATXVDXXCX XXXDPXXPGL DREXLYWELS XLTXXIXELG

19201 PYXLDRXS LY VNG<sup>269</sup> FTHWSSG LTTST<sup>285</sup> PWTST VDLGTSGTPS PVPSP<sup>177</sup> TAGP  
 19251 LLVPFTLNFT ITNLQYEEDM HRPGRKFN Tervlog<sup>208</sup> LS PIFKNTSVGP  
 19301 LYSGCRLTLL R<sup>2</sup> PEKQEAATG VDTICTHRVD PIGPGLDREX LYWELSXLTX  
 19351 XIXELGPYXL DRXS LYVNG<sup>2</sup> FXXXXXXXXTS TPGTSXVXLX<sup>7</sup> TSGTPXXXXPX  
 19401 XT<sup>2</sup> XXXPLLXP FTLNFTITNL XYEEXMXXPG SRKFNTTerv LQGI<sup>2</sup> LXPXFK  
 19451 XTSVGXLYSG CRLTLLR<sup>2</sup> KEK XXAATXVDXX CXXXXDPXXP GLDREXLYWE  
 19501 LSXLTXIXE LGPYXLDRXS LYVNG<sup>258</sup> FTHRS FGLTTS<sup>285</sup> PWT STVDLGTSGT  
 19551 PSPVPSPT<sup>179</sup> TA GPLLVFTLN FTITNLQYEE DMHRPGSRKF NTTervLQGI<sup>219</sup>  
 19601 LTPLFRNTSV SSLYSGCRLT LL<sup>2</sup> PEKDGA TRVDAVCTHR PDPKSPGLDR  
 19651 EXLYWELSXL TXXIXELGPY XLDRXS LYVN<sup>2</sup> FXXXXXXXXX TST<sup>2</sup> PGT SXVX  
 19701 LXTSGTPXXX PXX<sup>2</sup> TXXXPLL XPFTLNFTIT NLXYEEXMXX PGSRKFNTTE  
 19751 RVLQGI<sup>2</sup> LXPX FKXTSVGXLY SGCRLTLLR<sup>2</sup> EKXXAATXVD XXCXXXXDPX  
 19801 XPGLDREXLY WELSXLTXI XELGPYXLDR XSLYVNG<sup>267</sup> FTH WIPVPTSST<sup>281</sup>  
 19851 GTSTVDLGSG TPSSLPSPT<sup>175</sup> AGPLLVFTL NFTITNLQYG EDMGHPGSRK  
 19901 FNTTervLQG<sup>201</sup> ILGPIFKNTS VGPLYSGCRL TSLR<sup>2</sup> PEKGA ATGVDAICIH  
 19951 HLDPKSPGLD REXLYWELSX LTXXIXELGP YXLDRXS LYV<sup>7</sup> NG<sup>2</sup> FXXXXXXXX  
 20001 XTST<sup>2</sup> PGT SXV XLXTSGTPXX XPXX<sup>2</sup> TXXXPL LXPFTLNFTI<sup>2</sup> TNLXYEEXMX  
 20051 XPGSRKFNTT ERVLQGI<sup>2</sup> LXP XFKXTSVGXL YSGCRLTLLR<sup>2</sup> XEKKXAATXV  
 20101 DXXCXXXXDP XXPGLDREX<sup>2</sup> LYWELSXLTX IXELGPYXLD RXS LYVNG<sup>2</sup> FTH  
 20151 HQTFAPNTST<sup>264</sup> PGTSTVDLGT<sup>283</sup> SGTPSSLPSP T<sup>202</sup> AGPLLVPF TLNFTITNLQ  
 20201 YEEDMHHPGS RKFNTTervL<sup>183</sup> QGI<sup>2</sup> LGPMFKN TSVGLLYSGC RLTL<sup>2</sup> LR<sup>2</sup> PEKN  
 20251 GAATRVDVAVC THRPDPKSPG LDREXLYWEL SXLTXXIXEL GPYXLDRXSL  
 20301 YVNG<sup>2</sup> FXXXXX XXXTST<sup>2</sup> PGT SXVXLXTSGTP XXXPXX<sup>2</sup> TAPV PLLIPFTLNF  
 20351 TITNLHYEEN MOHPGSRKFNT TervLQGI<sup>188</sup> L RPLFKSTSVG<sup>213</sup> PLYSGCRLTL  
 20401 L<sup>242</sup> PEKHGAAT GVDAICTLRL DPTGPGLDRE RLYWELSOLT NSVTELGPYT  
 20451 LDRDS LYVNG<sup>273</sup> FTQRSSVPTT SIP<sup>290</sup> GTSAVHL ETSGTPASLP GHT<sup>2</sup> APGPLL  
 20501 PFTLNFTITN LQYEVDMRHP GSRKFNTTerv<sup>169</sup> VLQGI<sup>198</sup> LKPLF KSTSVGPLY  
 20551 GCRLTLLR<sup>239</sup> PE KRGAAATGVDT ICTHRLDPLN PGLDREQLYW ELSKLTRGII

20601 ELGPYLLDRG SLYVNG<sup>200</sup>FTHR NFPITST<sup>292</sup>PG TSTVHLGTSE TPSSLPRPT<sup>292</sup>  
 20651 PGPLLVPFTL<sup>160</sup> NFTITNLQYE EAMRHGSRK FNTTERTVLOG<sup>160</sup> LRPFLKNTS  
 20701<sup>212</sup> IGPLYSSCRL TLL<sup>247</sup>PEKDKA ATRVDAICTH HPDPQSPGLN REQLYWELSO  
 20751 LTHGITELGP YTLDRDSLYV D<sup>208</sup>FTHWSPI<sup>2</sup>P TTST<sup>293</sup>PGTSIV NLGTSGIPPS  
 20801 LPETT<sup>198</sup>XXXPL LXPFTLNFTI<sup>2</sup> TNLYEEXMX XPGSRKFNTT ERVLOG<sup>233</sup>ILKP  
 20851 LFKSTSVGPL YSGCRLTLR<sup>274</sup>PEKDG VATRV DAICTHRPDP KIPGLDRQOL  
 20901 YWELSQLTHS ITELGPYTL<sup>294</sup>D RDSLYVNG<sup>181</sup>FT QRSSVPTTST<sup>274</sup> PGTFVTQPET  
 20951 SETPSSSLPGP<sup>220</sup> TATGPVLLPF TLNFTITNLQ<sup>220</sup> YEEDMHRPGS RKFNTERVL  
 21001 OGIL<sup>232</sup>MLPLFKN TSVSSLYSGC RLTLR<sup>200</sup>PEKD GAATRVDAVC THRPDPKSPG  
 21051 LDRERLYWKL<sup>289</sup> SOLTHGITEL GPYTLDRHSL YVNG<sup>185</sup>FTHQSS MTTTR<sup>275</sup>PDTS  
 21101 TMHLATSRT<sup>215</sup>P ASLSGPT<sup>231</sup>AS PLLVLETINF TITNLRYEEN MHHGSRKFEN  
 21151 TTERVLQGL<sup>295</sup>IL RPVFKNTSVG PLYSGCRLTL L<sup>190</sup>PKKDGAAT KVDICTYRP  
 21201 DPKSPGLDRE<sup>210</sup> QLYWELSQLT HSITELGPYT QDRDSLYNVG<sup>275</sup> FTQRSSVPTT  
 21251 SV<sup>295</sup>PGTPTVDL GTSGTPVSKP GPS<sup>190</sup>ASPLL<sup>210</sup>V LFTLNGTITN LRYEENMQHP  
 21301 GSRKFNTTER VLQGL<sup>225</sup>ILRS LF KSTSVGPLY<sup>225</sup>S GCRLTL<sup>225</sup>LPE KDGATGVDA  
 21351 ICTHHPDPKS<sup>255</sup> PRLDREQLYW ELSQLTHNIT ELGHYALDND SLFVNG<sup>290</sup>FTHR  
 21401 SSVSTTST<sup>255</sup>PG TPTVYLGASK TPASIFGPS<sup>290</sup>A ASHLLILETL NFTITNLRYE  
 21451 ENMWPGSRKF<sup>211</sup> NTTERVLQGL<sup>220</sup> LRPFLKNTSV GPLYSGSRLT L<sup>192</sup>PEKDGEA  
 21501 TGVDICTHR<sup>254</sup> PDPTGPGLDR EQLYLELSQL THSITELGPY TLDROSLYVN  
 21551<sup>254</sup> GFTHRSSVPT<sup>254</sup> TS<sup>193</sup>GVVSEEP FTLNFTINNL RYMADMGQPG SLKFNITDNV  
 21601 MKHIL<sup>209</sup>SPLFQ RSSLGARYTG CRVIAL<sup>248</sup>FSVK NGAETRVDLL CTYLOPLSGP  
 21651 GLPIKQVFHE<sup>248</sup> LSQQTHGTR LGPYSLOKDS LYLNG<sup>270</sup>YNEPG LDEPPT<sup>270</sup>PKP  
 21701<sup>297</sup> ATTFLPPLSE<sup>297</sup> ATT<sup>194</sup>AMGYHLK TLTLNFTISN LQYSPDMGKG SATFNSTEGV  
 21751 LQHL<sup>221</sup>ILRPLFQ KSSMGPFYLG CQLISL<sup>221</sup>RPEK DGAATGVDTT CTYHPDPVGP  
 21801 GLDIQQLYWE<sup>249</sup> LSQTHGVTQ LGFYVLDRDS LFING<sup>249</sup>YAPON LSIRGEY<sup>249</sup>IN  
 21851<sup>298</sup> FHIVNWNLSN PDPTSSEY